ATOMIC ENERGY newsletter®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH

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Dear Sir:

The world's first and largest privately financed fusion research program will be discussed at a symposium scheduled for Nov. 20-21, 1959, at the University of Texas, Austin. Physicists of General Atomic division of General Dynamics Corp. will outline work that has been done in the fusion field at GA's San Diego, Calif., laboratory under the co-sponsorship of the Texas Atomic Energy Research Foundation. Speakers from GA will include E. C. Creutz, head of research at GA; D. W. Kerst, leader of the fusion research program; M. N. Rosenbluth, theoretical physicist; and W. L. Fite, in charge of atomic beam studies. Details may be obtained from GA at P.O. Box 608, San Diego, Calif.

New nuclear energy research and development center will be built in Manitoba by Atomic Energy of Canada, Ltd. Canada's only other major nuclear research center is the Chalk River, Ontario establishment of AECL on the Ottawa river, about 150-miles northwest of Ottawa, although it has a nuclear power plant division in Toronto and a commercial products division in Ottawa. Construction of buildings and laboratories and installation of equipment and technical services at the Manitoba site (location of which is still to be determined) will begin with the next major project to be undertaken by AECL in the research and development field. This may be an organic-cooled, natural uranium-fueled, heavy water-moderated power reactor experiment in about two years' time. (Other NEW PROJECTS, p.2 this LETTER.)

Now undergoing trial runs in the Baltic is the world's first nuclear powered surface ship, the 16,000 tons Russian ice-breaker, the Lenin. The ship uses three nuclear reactors, of pressurized light water type, fueled with 5% enriched uranium. The turbo-electric propulsion system used is said to be capable of delivering 44,000 shaft horsepower, (with two reactors in use, one always being in reserve) which is 50% more than that of any ice-breaker so far in commission. It is claimed that it can maintain a 2-knot speed while cutting through ice seven feet thick; in open water its maximum speed is said to be 18-knots. The Lenin is 440-ft. long, with a beam of 90-ft. Her economic objective is to keep the northern Siberian trade routes running for an additional four weeks in the year. (The Savannah, first U.S. nuclear powered ship, was launched July 21st of this year. One reactor, with steam-turbine propulsion, will provide 22,000 shaft horsepower. Meanwhile, land-based dual-reactor prototype plant for large naval surface vessels was operated at full power last fortnight at the USAEC's national reactor testing station, Arco, Idaho. The plant (A1W), first of its kind, will power the guided missile cruiser Long Beach, under construction at the Bethlehem yards, Quincy, Mass., and the supercarrier Enterprise being built by Newport News Shipbuilding & Dry Dock Co., Va. The Long Beach will have two A1W-type reactors; the Enterprise eight. Westinghouse Electric people designed the A1W.) (Other BUSINESS NEWS, p.2 this LETTER.)

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ATOMIC ENERGY CONTRACT NEWS...

NUCLEAR ROCKET SYSTEM BEING STUDIED:- Lockheed Nuclear Products, a branch of Lockheed Aircraft's Georgia division, was selected by National Aeronautics & Space Administration (NASA) for negotiation of this agency's first contract to provide basic engineering data on a feasibility investigation of a nuclear rocket system. Lockheed's bid on the 3-year study, expected to cost in excess of $1 million, was one of seven received by NASA. Main work will be done by Lockheed people at NASA's Plum Brook reactor facility near Sandusky, Ohio. The work includes studies on the behavior of possible nuclear rocket materials at temperatures around minus 420 deg. F. while undergoing reactor radiation exposure.

TIME FOR PROPOSALS EXTENDED:- Deadline has been extended by the USAEC for receipt of proposals for participation by public power organizations and cooperatives in a small pressurized water nuclear power plant the Commission is designing and will construct. Original date of Nov. 16 was moved up to Dec. 21, 1959, when some of the 45 interested organizations asked additional time to prepare proposals. Objectives of the plant are to achieve economic generation of electricity with a relatively small unit. Conceptual design of the steam producing portion of the plant is now under way by Gibbs & Hill, Inc., New York; construction of the project is expected to start June, 1960, with completion scheduled for mid-1962. (Organizations submitting proposals must furnish at their own expense plant site, turbogenerating facilities, and associated buildings and services. They must also operate the plant, buying reactor-produced steam from the USAEC which will own a substantial part of the plant.)

TANKER STUDY CONTRACT AWARDED:- Study of a prototype pressurized water reactor to power a tanker will be undertaken by Combustion Engineering, Inc., Windsor, Conn., under $150,000 contract the company has received from the USAEC. The study is one of several the Commission will instigate to determine suitability of various reactor types to power a 45,000 deadweight ton tanker capable of being built and ready for operation by 1964. The ship would have a speed of 18.5 knots at a normal shaft horsepower of 27,300; maximum shaft horsepower would be 30,000.

ATOMIC ENERGY BUSINESS NEWS...

CAPACITY OF REACTOR EVALUATION CENTER TO BE INCREASED:- Capacity will be doubled of the Westinghouse reactor evaluation center near Waltz Mill, Pa., under expansion program planned by the company. The evaluation center, which went into operation in Dec., 1957, is used to test nuclear properties of reactor cores, and to obtain data essential to core development and design. The new addition, which will allow the center to accommodate the largest cores for forthcoming reactors, is expected to be completed during the first quarter of next year. (Currently being tested are fuel elements for the first nuclear power plant built in the U.S. for export, and which will be erected at Mol, Belgium.)

NUCLEAR PRESSURIZERS BEING SUPPLIED ON ORDER:- Ten stainless steel pressurizers will be supplied by Alco Products, Inc., Schenectady, N.Y., for use in nuclear powered submarines of the Skipjack class. Order for the pressurizers was placed with Alco by Westinghouse Electric, holder of prime USAEC contract for the submarine plant. Alco will begin delivery of the order in Feb., 1960, and expects to complete it during the year.

GAMMA RADIATION PROCESSING PLANT ON PILOT-SCALE:- Pilot plant for radiation processing is now being built at the U. K. Atomic Energy Authority's Wantage Radiation Laboratories. The new plant will be used by the technological irradiation group of the isotope research division, Atomic Energy Research Establishment. The irradiation cell which will take about 1,000 sq. ft. of the plant's 10,000 sq. ft. total, has been designed to house half a million curies of cobalt-60, but initial loading will be 150,000 curies. The plant is based on handling a unit package of approximately 1 cu. ft., and will handle such packages continuously and automatically from the bulk store-room, through the irradiating equipment, and into the treated material store-room. Facilities of the plant will be available to commercial firms in Britain to carry out full-scale trial runs of irradiation processes, such as sterilization of medical equipment; etc.

NEW PRODUCTS, PROCESSES, INSTRUMENTS...for nuclear lab & plant...

NEW PRODUCTS:- Gamma and X-ray dosimeter, model DT-60/PD, uses as sensitive element radiophoto-luminescent glass which emits luminescent light, under near-ultraviolet radiation after exposure to X- or gamma radiation. The dosimeter, which weighs one ounce, is worn about the neck as a pendant. It is said to record exposure to radiation cumulatively from 10 to 600 roentgens. (A companion computer-indicator model CP-263/PD can handle about 200 readings per hour; it operates on five 1½-v, size D batteries.) --Specialty Electronics Development Corp., Syosset, N.Y.

Continuously variable 0-2000 v. power supply, model 2000VPS-100, features double and triple filament regulation to provide long term stability of 0.0004 per day. Ripple is said to be less than 5 mv, rms. Primary application of the power supply is in nuclear reactor instrumentation and scintillation counter spectrometry; it is said to exceed Argonne National Laboratories' requirements for stability of electron photomultiplier tube scintillation. --Gyra Electronics Corp., La Grange, Ill.

PRODUCT NEWS:- Three new gamma-ray radioactivity standards are now available from the National Bureau of Standards. Strontium-85, niobium-95, and mercury-203 can now be obtained from the NBS in approximately 5-grams of solution, sealed in glass ampoules. They are priced at $27.00 each. The standards, because of their high activities, can be sold only to individuals or firms holding USAEC by-products material license. Details of these standards are in NBS circular 552, 3rd edition, (35¢) obtainable from Supt. of Documents, Wash. 25, D.C.

MANUFACTURERS' NEWS:- Costs of radiation processing are reduced to "1/4 of their present level", with its new L-band linear accelerator, according to Applied Radiation Corp., Walnut Creek, Calif. This is based on the use of a one section machine (14 mev, 8 kw at 10 mev) designed specifically for production processing. Initial capital investment for a one section machine is approximately $170,000. The result of three years of development, the new accelerator was placed on test by Applied Radiation this past July. Data produced during the theoretical design and experimental testing have resulted in the company receiving orders for the three largest linear accelerators ever sold in the U.S. Each machine was sold for approximately $1 million. The first will be delivered to Yale University. This is a five section unit designed to produce 28 kw of power and the highest energy (77 Mev) of any commercial linear accelerator. The second is being constructed for Rensselaer Polytechnic Institute. With a maximum power of 48 kw, it is believed that it will be the most powerful accelerator of any kind, in the world, when it is placed in operation late in 1960. The third accelerator is for the University of California Radiation Laboratory at Livermore, Calif. This machine will have a 30 micro-second pulse-6 times longer than can be obtained in any linear accelerator today.

Nuclear powered aircraft using a direct-cycle turbojet engine can be developed to attain high supersonic speeds, according to M. C. Leverett and W. F. Savage of General Electric Co's aircraft nuclear propulsion department, Cincinnati, Ohio. This GE department has been working under government contracts to develop the direct-cycle power plant for the U. S.'s first nuclear aircraft. Drs. Leverett and Savage addressed U. S. Air Force people and experts from the aviation industry last week in Boston at an area meeting of the Air Research and Development Command. They reported that it seems likely the direct cycle can be developed into a subsonic power plant of good performance; moreover, they noted, supersonic direct-cycle powered aircraft are well within the span of laboratory development. (They based their observation on the fact that a relatively large number of materials show promise toward very high turbine temperatures, which will permit high thrust levels. They also suggested that two or more reactors per aircraft would, because of reliability considerations, be preferable to a single large reactor.)

A study has been underway at Chance Vought Aircraft, Inc., Dallas, Tex., on a proposed supersonic low-altitude missile to be powered by a nuclear ramjet engine; the work has been done for the U. S. Air Force, the company has disclosed. W. P. Thayer, general manager, said the study had "firmly convinced" the company of the feasibility of using nuclear power for such a purpose. He noted that the nuclear ramjet engine used would be the one under study in the USAEC's Project Pluto. This is a combined project of the Livermore Laboratory; Atomics International division of North American Aviation, Inc.; and Marquardt Co.

ATOMIC ENERGY PATENT DIGEST...

PATENTS ISSUED September 22, 1959 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:- (1) Film holder for radiographic examination of pipe welds. H. J. Thielsch, inventor. No. 2,905,824 assigned to Grinnell Corp., Providence, R.I. (2) Method and apparatus for measuring specific activity of radioactive materials in small quantities. J. F. Black, E. O. Forster, inventors. No. 2,905,825 assigned to Esso Research & Engineering Co. (3) Measurement of gamma ray energy due to inelastic neutron scattering. T. W. Bonner, R. L. Caldwell, inventors. No. 2,905,826 assigned to Socony Mobil Oil Co., Inc. (4) X-ray apparatus. E. B. Graves, inventor. No. 2,905,827 assigned to Picker X-Ray Corp., Waite Man. Div., Inc., Cleveland, Ohio. (5) Manufacturing of metallic uranium. W. Voos, inventor. No. 2,905,551 assigned to Lonza Electric & Chemical Works, Ltd., Basle, Switzerland. (6 & 7) Conversion of hydrocarbons in the presence of neutron irradiation and a hydrogenation catalyst. R. B. Long, H. J. Hibshman, J. P. Longwell, R. W. Houston, inventors. Nos. 2,905,606 & 2,905,607 assigned to Esso Research & Engineering Co. (8) Treatment of catalyst materials with high energy radiations. C. R. Noddings, W. E. Miller, T. C. Engelder, inventors. No. 2,905,608 assigned to Dow Chemical Co., Midland, Mich. (9) Conducting hydrocarbon conversions in nuclear reactors. E. P. Wigner, inventor. No. 2,905,610 assigned to Esso Research & Engineering Co.

PATENTS ISSUED September 22, 1959 to GOVERNMENTAL ORGANIZATIONS:- (1) Indexing mechanism. L. J. Koch, inventor. No. 2,905,338 assigned to USAEC. (2) Method of separation of plutonium from carrier precipitates. L. R. Dawson, inventor. No. 2,905,525 assigned to USAEC. (3) Method of separating uranium and thorium from each other. R. Mahut, J. Muller, J. Sauteron, inventors. No. 2,905,524 assigned to Commissariat a l'Energie Atomique, Paris, France. (4) Method of processing ore material. R. F. McCullough, inventor. No. 2,905,526 assigned to USAEC. (5) Withdrawing light isotope product from a liquid thermal diffusion plant. M. Dole, inventor. No. 2,905,527 assigned to USAEC. (6) Method for preparation of uranium oxide particles. J. R. Johnson, A. J. Taylor, inventors. No. 2,905,528 assigned to USAEC. (7) Production of uranium metal by carbon reduction. R. B. Holden, R. M. Powers, O. J. Blaber, inventors. No. 2,905,552 assigned to USAEC. (8) Electrolytic cladding of zirconium on uranium. J. J. Wick, inventor. No. 2,905,559 assigned to USAEC. (9) Fuel element for a neutronic reactor. L. Tonks, inventor. No. 2,905,611 assigned to USAEC. (10) Central control system. L. B. Borst, inventor. No. 2,905, 612 assigned to USAEC.

PATENTS ISSUED September 29, 1959 to PRIVATE ORGANIZATIONS:- (1) Process of irradiating polyethylene at elevated temperatures. E. J. Lawton, A. M. Bueche, inventors. No. 2,906,678 assigned to General Electric Co. (2) Irradiated polyethylene. E. J. Lawton, inventor. No. 2,906,679 assigned to General Electric Co. (3) Control and transmission method and apparatus. E. I. Goodman, inventor. No. 2,906,878 assigned to Nuclear Science & Engineering Corp., Homestead, Pa. (4) Radiographs in contrasting color. G. S. Mittelstaedt, inventor. No. 2,906,881 issued to inventor of record. (5) Radiation survey method. J. W. Merritt, inventor. No. 2,906,882 issued to inventor of record.

PATENTS ISSUED September 29, 1959 to GOVERNMENTAL ORGANIZATIONS:- (1) Reduction in plutonium recovery processes. D. M. Ritter, R. P. S. Black, inventors. No. 2,906,597 assigned to USAEC. (2) Preparation of high density uranium dioxide. J. M. Googin, inventor. No. 2,906,598 assigned to USAEC. (3) Reactor cooling. C. F. Quackenbush, inventor. No. 2,906,683 assigned to USAEC. (4) Processes for production of uranium. J. W. C. Crawford, inventor. No. 2,906,618 assigned to USAEC. (5) Welding method. A. A. Cornell, J. V. Dunbar, J. H. Ruffner, inventors. No. 2,906,852 assigned to USAEC. (6) Rise time delay discriminator. C. W. Johnstone, inventor. No. 2,906,872 assigned to USAEC. (7) Calutron receiver. W. O. Brunk, inventor. No. 2,906,876 assigned to USAEC. (8) Calutron. F. F. Oppenheimer, inventor. No. 2,906,877 assigned to USAEC. (9) Impedance alarm system. R. G. Cowen, inventor. No. 2,907,017 assigned to USAEC. (10) Low voltage 14 mev neutron source. E. R. Graves, R. N. Little, inventors. No. 2,906,903 assigned to USAEC. (11) Ground clearance indicator. L. V. Skinner, inventor. No. 2,907,023 assigned to USAEC.

NEW BOOKS & OTHER PUBLICATIONS...

Uranium Production Technology. Charles D. Harrington, Archie E. Ruehle, editors. Comprehensive compilation of the technology of uranium production used in the U. S. atomic energy program. 579 pages. --D. Van Nostrand Co., Inc., Princeton, N.J. ($17.50)

Isotope Index; 4th Edition. Lists source of all commercially available isotopes. Covers some 4000 items obtainable from more than 50 U. S., Canadian, British, French and German suppliers; prices; etc. --Scientific Equipment Co., P.O. Box 19086, Indianapolis, Ind. ($5.00)

Gamma Radiation Effect on Electrical Conductivity of Materials. W. F. Pfeiffer. 68 pages. No. PB-140924. (Microfilm: $3.90; photostat: $10.80).....Silane Glass as a Beta and Gamma Scintillator. R. F. Cooper. 52 pages. No. PB- 140941. (Microfilm: $3.60; photostat: $9.30).....Use of Boron Loaded Silane Glass Scintillators for Thermal Neutron Detection. E. N. Kemler. 47 pages. No. PB- 140925. (Microfilm: $3.30; photostat: $7.80). --Library of Congress, Washington 25, D.C.

Geiger Counter for Large Diameter Sources. L. Bird, J. Kinch, Army Chemical Center. 17 pages. No. PB-151321. (50¢).....Effects of Irradiation on Quartz and Quartz Crystal Units; A Literature Survey. R. Bechmann, Army Signal Research & Development Lab., Fort Monmouth, N.J. 59 pages. No. PB-151697. ($1.50)

NOTES:- Books on nuclear engineering and allied subjects are covered by catalog No. 678 of B. H. Blackwell, Ltd., Broad St., Oxford, England. British, French, U. S. and other publishers' works are offered.

MANUFACTURERS' LITERATURE:- New catalog-price list, called Schedule E, of Nuclear-Chicago Corp., Des Plaines, Ill., is devoted entirely to radioactive compounds, radiation sources, radioactivity standards, and radiation source kits.

New bulletin, GEA-6934, describes facilities for irradiation services of General Electric Co.'s Atomic Power Equipment Department. Copies of the bulletin may be obtained from GE's Apparatus Sales Div., Schenectady, N.Y.

ATOMIC ENERGY FINANCIAL NEWS...

INTEREST IN ZIRCONIUM FIRM IS SOLD:- National Research Corp., Cambridge, Mass., has disposed of its holdings in Columbia-National Corp. through an exchange deal with Pittsburgh Plate Glass Co. Under this arrangement, National Research gives up its holdings in Columbia-National Corp., for $1 million of 4% cumulative preferred stock of Columbia-Southern Chemical Corp., a wholly-owned subsidiary of Pittsburgh Plate Glass. This will be convertible under certain conditions to $5 million of Pittsburgh Plate Glass common stock. (Columbia-National, originally called NRC Metals Corp., and owned equally by National Research and Columbia-Southern, built one of the world's largest plants for the separation and reduction of zirconium sponge. It holds a five-year USAEC contract to supply that agency with 3½ million lbs. of zirconium with an estimated sales price of $23 million.)

FIRST DIVIDEND DECLARED BY URANIUM PRODUCER:- Cash dividend of $1.00 a share will be paid by Consolidated Denison Mines, Ltd., on Oct. 28, 1959 to shareholders of record Oct. 14. The dividend involves a cash distribution of $4,451,215. Estimated earnings of the Canadian uranium mining and milling firm for the first nine months of 1959 will be approximately $12,500,000, equal to about $2.80 per share, according to S. B. Roman, company president. This compares with net profit of $5,977,000, equal to $1.34 per share, for the like 1959 period.

SHARES TO BE ISSUED FOR STOCK OPTION:- Registration statement has been filed by Beckman Instruments, Inc., Fullerton, Calif., with the SEC, seeking registration of 117,559 shares of common stock. The stock is issuable upon exercise of options granted and to be granted under the company's restricted stock option plan. Beckman Instruments manufactures industrial control instruments, including devices for nuclear applications.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

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